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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/394,264	09/10/1999	CYNTHIA C. MORTON	10286/008001	3961

26161 7590 02/13/2004

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EXAMINER	
WINKLER, ULRIKE	

ART UNIT	PAPER NUMBER
1648	

DATE MAILED: 02/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/394,264	MORTON ET AL.	
	Examiner	Art Unit	
	Ulrike Winkler	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8-17,19-27 and 35-69* is/are pending in the application.

4a) Of the above claim(s) *8-17 and 19-27* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *35-69* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 6, 2003 has been entered.

Applicant's amendment canceled claims 1-7, 18, 29-37 and added new claims 35-69 which

The rejection of claim 30 under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention **is withdrawn** in view of Applicant's cancellation of the claims.

The rejections of claim 30 under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention **is withdrawn** in view of Applicant's cancellation of the claims.

The rejection of claims 1, 2, 18, 30, 32 and 33 under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to

reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention **is withdrawn** in view of Applicant's cancellation of the claims.

The rejection of claim 18 is provisionally under the judicially created doctrine of double patenting over claims 17-21 of copending Application No. 09/579288 **is withdrawn** in view of Applicant's cancellation of the claim.

The objection of claims 3-7 **is withdrawn** in view of Applicant's cancellation of the claims.

The objection of claim 31 is objected for having informalities **is withdrawn** in view of Applicant's cancellation of the claim.

New Rejections:

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 35-69 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant

art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The instant claims are drawn to probes and primers that can detect a lesion in SEQ ID NO:1 or a lesion in the naturally occurring variant of SEQ ID NO:1.

The guidelines (Fed. Register, Vol. 66, No. 4, January 5, 2001) indicate where a genus is claimed (variant of SEQ ID NO:1) sufficient written description may be provided by a representative number of species that have been reduced to practice. Relevant, identifying characteristics, i.e., structure or other physical and/or biochemical properties, by functional characteristics coupled with a known or disclosed correlation between function structure, or by a combination of identifying characteristics, sufficient to show the applicant was in possession of the claimed genus. The guidelines go on to say that there are instances where a single disclosed species may be adequate to describe the genus. Because, the claims are drawn to isolated nucleic acid molecules which according to the specification (see page 16) includes cDNA and genomic DNA as well as allelic variants, the disclosure of the open reading frames (from human and mouse) is not sufficient to identify the genus, which included genomic DNA and allelic variants. The nucleic acid sequence similarity between human and mouse is 89% in the area covering the open reading frame. The areas outside of the open reading frame are not identified structurally in the specification, knowledge of these areas is required in order to make primers which allow for sequencing across exon 4 or 5. The specification discloses isolated cDNA sequence, SEQ ID Nos : 1 and 6, which encodes a predictive polypeptide sequence, SEQ ID NOs. 2 and 7. Absent evidence to the contrary, each of the SEQ ID NOS elected for examination is deemed to be a cDNA. The claims, as written, however, encompass polynucleotides which vary substantially in length and in nucleotide composition, the genes also include undescribed 5' and

3' regulatory elements. The broadly claimed genus additionally encompasses genes as well as genes incorporating only portions of the disclosed sequence. The instant disclosure of a single species of nucleic acid does not adequately describe the scope of the claimed genus. Since the disclosure fails to describe the common attributes or characteristics that identify members of the genus of genomic DNA or allelic variants, the disclosure of specific nucleotide sequences and the ability to screen, is insufficient to describe the genus probes and primers which bind to the intervening sequences which would be required in order to amplify the exon region of exon 4 or 5. Furthermore, the specification only discloses a causal connection between the specific substitution at residues 51, 66, 88 and 117 of SEQ ID NO:2 with hearing loss, the specification has not provided such a correlation with an insertion or deletion at these positions. One of skill in the art would reasonably conclude that the disclosure fails to provide a representative number of species to describe and enable the genus as broadly claimed.

Claims 35-69 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for diagnosing a hearing loss or a condition that is predictive of developing a hearing loss due to the specific substitution at residues 51, 66, 88 and 117 of SEQ ID NO:2, does not reasonably provide enablement for insertions or deletion at one or more nucleotides encoding the specific amino acids. An insertion or deletion of one or more (two) nucleotides would lead to will lead to a premature termination of the protein that may or may not have the disclosed phenotype. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

> MPEP 2164.01(a) Undue Experimentation Factors. There are many factors to be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is "undue." These factors include, but are not limited to: (A) The breadth of the claims; (B) The nature of the invention; (C) The state of the prior art; (D) The level of one of ordinary skill; (E) The level of predictability in the art; (F) The amount of direction provided by the inventor; (G) The existence of working examples; and (H) The quantity of experimentation needed to make or use the invention based on the content of the disclosure.

The specification does not disclose how to amplify all or a portion of exon 4 or 5 using a single primer. The specification has not provided any information regarding the intervening sequences outside of exon 4 or 5 which would be required in order to choose primers that can be used to amplify a given sequence across the exon. The claims are not clear in that the probe must span the specific lesion, as the claims are written the probes need only bind to a nucleic acid that encompasses the lesion. For example, if the sequence spanning amino acid residues 30-90 is amplified and then detected with a probe that binds to the region between amino acids 30-39, this probe would not detect a specific lesion that is associated with a hearing disorder yet the probe would bind to nucleic acid sequence that comprises the lesion. The specification only discloses a causal connection between the specific substitution at residues 51, 66, 88 and 117 of SEQ ID NO:2 with hearing loss, the specification has not provided such a correlation with an insertion or deletion at these positions. Reasonable correlation must exist between the scope of the claims and scope of enablement set forth, and it cannot be predicted from the disclosure how to make/use variant, mutant of SEQ ID NO: 1. Therefore, undue experimentation would be required to practice the full scope of the claims.

Conclusion

Claims 35-69 are rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ulrike Winkler, Ph.D. whose telephone number is 703-308-8294, please note after February 2004 the telephone number will change to 571-272-0912. The examiner can normally be reached M-F, 8:30 am - 5 pm. The examiner can also be reached via email [ulrike.winkler@uspto.gov].

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Housel, can be reached at 703-308-4027.

The official fax phone number for the organization where this application or proceeding is assigned is 703-872-9306; for informal communications please use 703-746-3162, please note after February 2004 the fax phone number will change to 571-273-0912.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

ULRIKE WINKLER, PHD.
PATENT EXAMINER 2/9/04